Delirium Management in a Medical and Surgical ICU

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Background

- Incidence of delirium in the ICU ranges from 45% to 87%
  - May be higher in mechanically ventilated patients
- Delirium is associated with increased mortality, greater length of hospital stay and reduced functional ability
- Intensive Care Delirium Screening Checklist (ICDSC) is a 8 item checklist based on Diagnostic Statistical Manual (DSM)-IV criteria
  - Based on observations of the patient over a 12 hour shift
  - Score of 4 or greater represents a positive screen for delirium
  - Sensitivity 99%; specificity 64%
- Minimal evidence that treatment with antipsychotics and dexmedetomidine reduces the incidence or duration of delirium
- Pharmacological treatment carries a risk for adverse effects and unknown long term effects

Objectives

- **Primary:**
  - Determine the incidence of delirium in patients requiring mechanical ventilation (MV) for ≥ 48 hours admitted to SMH ICU
  - Describe pharmacological treatment for delirium in SMH ICU
  - Determine the time to first resolution and recurrence of delirium per patient prescribed pharmacological treatment and pre-emptive treatment
- **Secondary:**
  - Describe adverse effects of pharmacological treatment
  - Describe adverse events

Methods

- **Design:** Retrospective cohort study
- **Inclusion Criteria:**
  - Age ≥ 18 years
  - Admitted to SMH ICU from Jan 24, 2016 – June 23, 2017
  - Have at least one ICDSC score ≥ 4 during admission
  - Require MV ≥ 48 hours
- **Exclusion Criteria:**
  - RASS (Richmond Agitation Sedation Scale) score of ≤-3
  - Patients being terminally weaned
- **Sample size:**
  - N=178; P=0.65, d=0.06, 95% Confidence Level
  - Subjects were selected in reverse chronological order
- **Statistical Analysis:**
  - Descriptive statistics
- **Definitions:**
  - **Resolution:** ICDSC score ≤ 4 for 48 hours
  - **Recurrence:** ICDSC score ≥ 4 within 48 hours of resolution
  - **Pre-emptive Treatment:** 24 hours prior to ICDSC score ≥ 4

Table 1: Patient Characteristics

	N=178
Female, n (%)	61 (34)
Age (years), median (IQR)	61.5 (53-70)
Day of ICU Admission with ICDSC score ≥ 4, median (IQR)	5 (4-7)
APACHE II Score, median (IQR)	20 (16-26)
Length of MV (days), median (IQR)	6.7 (4.2-9.8)
ICU Length of Stay (days), median (IQR)	9.5 (7-13.8)
Hospital Length of Stay (days), median (IQR)	26 (15-46)
Admitting diagnosis, n (%)	
Sepsis (pneumonia, skin soft tissue, UTI)	62 (35)
Cardiac Arrest/ACS/Cardiogenic Shock	27 (15)
Substance Use Disorder or Overdose	19 (11)
COPD/Asthma Exacerbation	14 (8)
GI bleed	8 (4)
Hepatic Failure	7 (4)
Stroke	6 (3)
Other	35 (20)
ICU Mortality, n (%)	5 (3)
Hospital Mortality, n (%)	18 (10)
Chronic Use of Antipsychotics Prior to Admission, n (%)	22 (12)

Table 2: Incidence of Delirium

| Requiring MV ≥ 48hrs admitted during study period	N=729
ICDSC ≥ 4, n (%)	360 (49)

Table 3: Resolution and Recurrence of Delirium

Pharmacological Intervention (N=178)	Resolution, n (%)	Time to Resolution median, (IQR)	Lost to Follow-up, n (%)	Recurrence, n
Yes (n=136)	63 (46)	3 (2-5) days	14 (10)	23
No (n=42)	31 (74)	3 (2-3) days	12 (29)	5
Pre-emptive Pharmacological Treatment (N=178)	**Resolution, n (%)**	**Time to Resolution median, (IQR)**	**Lost to Follow-up, n (%)**	**Recurrence, n**
Yes (n=68)	27 (40)	3 (3-5) days	6 (9)	7
No (n= 110)	67 (60)	3 (2-4) days	20 (18)	21

Table 4: Risk Factors for Delirium

	N=178
History of Alcohol or Drug Abuse, n (%)	65 (37)
Exposure to Benzodiazepine CIVI in the First 24 Hours of ICU Admission, n (%)	57 (32)
Pre-existing Dementia, n (%)	6 (3)
No Mobilization Within 48 hours of ICU Admission, n (%)	156 (70)

Figure 1: Pharmacological Treatment of Delirium
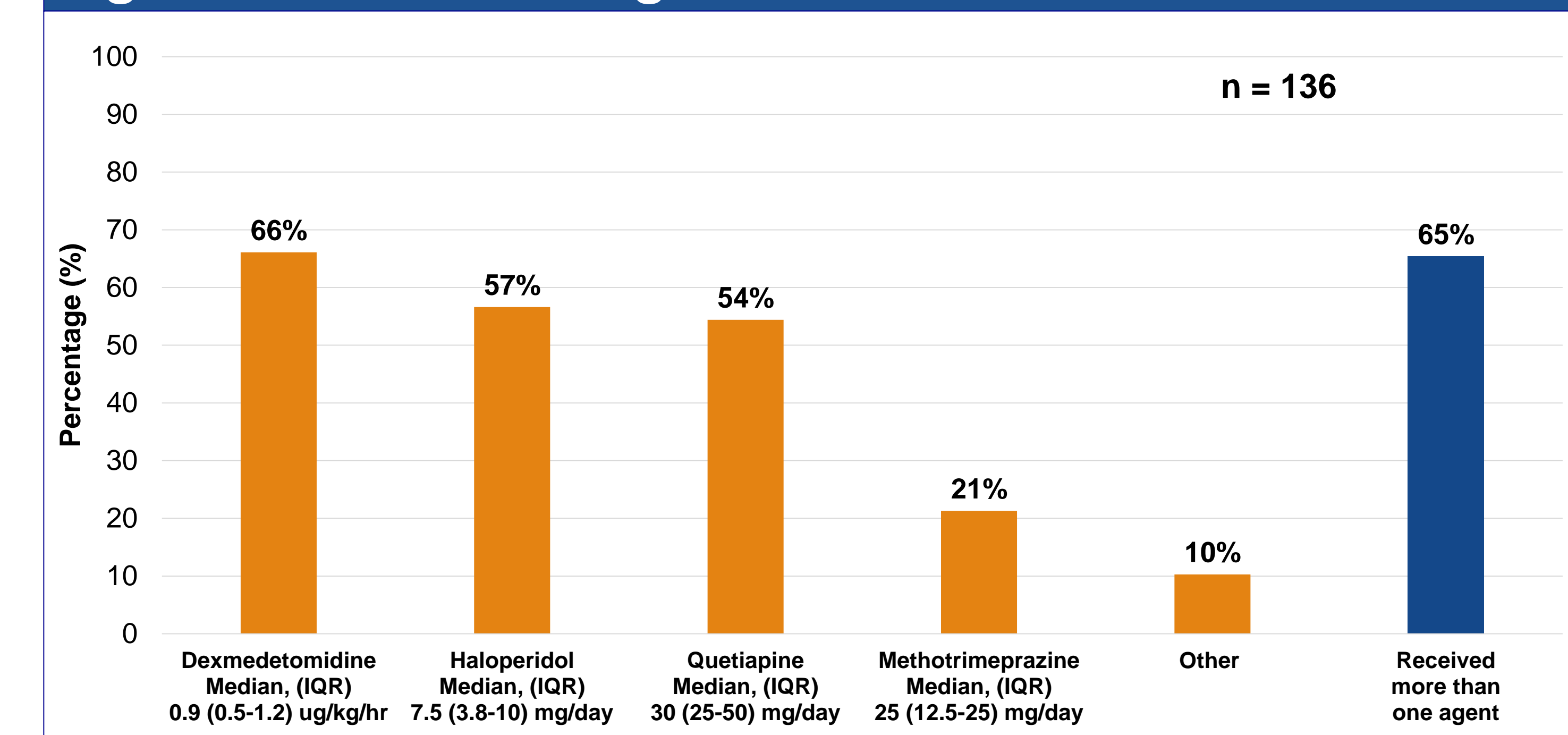
Table 5: Adverse Effects

	n=144
Bradycardia, n (%)	23 (16)
Hypotension, n (%)	14 (10)
Torsades De Pointes, n	1
Neuroleptic Malignant Syndrome, n	1

Table 6: Adverse Events Per Patient

	N=178
Self-extubation, n (%)	3 (1)
Self-removal of an invasive tube, catheter, or line, n (%)	24 (13)
Self-removal of > 1 invasive tubes, catheters, or lines, n (%)	16 (9)

Conclusion

- Delirium is associated with serious adverse events
- Resolution of delirium did not appear to be associated with pharmacological treatment and/or pre-emptive treatment
- Dexmedetomidine was the most commonly used agent for treatment
- Pharmacological interventions continue to be used as treatment options despite minimal evidence and risk of adverse effects
- New treatment options need to be explored for treating delirium